778
821 by sunlight (ibid.). It should also be noticed that many magical practices have to be performed before sunrise.

784 [258] To burn wool is bad for the sheep (Hiaina), or will make the
233 wool dear (Andjra, Ait Waryager). There is an exception to the rule that fire must not touch wool—ink is made of charred wool; but in this case the wool, instead of being pulled out, should be cut with a knife or a pair of scissors or shears so that the sheep shall not suffer pain (Ulad Bu aziz, Ait Waryager), and it must on no account be washed before it is charred (Ait Waryager). The ewe from which it is taken will not have much wool that year, but the next year it will have more wool than other sheep (Ulad Bu aziz). If milk boils over into the fire the cow will have a diseased udder (Shawia, Mogador), or it will give little milk or milk which is poor in cream (Andjra, Ait Waryager). A scribe from the Ait Waryager, however, knew how to prevent the evil: a written charm should be put underneath the daqnust, or jar, into which the milk is poured immediately after the cow is milked, or it should be fastened to the rope by which the aqasror, or two-eared earthenware vessel used for the making of butter, is suspended from the roof. If biestings are spilled in the fire the calf will die in consequence (Andjra), or the cow or sheep will die or be stolen or confiscated or at any rate will produce no milk (At Ubahti).
[252] Among the Ait Waryager the biestings must not be boiled after the third day and until forty days have passed after the birth of the calf; if they were boiled during this period, the calf would die or the milk of the cow would only give a small quantity of butter.

776 [262] The Moors, like all Muhammadan peoples, believe in the existence of a special race of spiritual beings that were created before man. In classical Arabic they are called jinn or jann, in Morocco generally jnun or jnun, the singulars of which are jenn and jenn. A female spirit of this class is called jenniya or jenniya.

The Rifians of the Ait Waryager and Temsaman use the words jjenn and jjnun, the At Ubahti jenn and jnun. A jenniya is in the last-mentioned tribe called tajenniht, among the Ait Yusi tajennit, among the Ait Waryager dajennit.

[268] In Andjra and the Rif any animal or man that throws no shadow in sun- or moonlight is likewise taken for a jenn. If a person wants to shoot a wild animal or bird in the morning or afternoon, he says three times, Ana be llah u be s-sra m ak, "I am protected

000 40--Adultery in the Rif is almost always punished by the death of both the guilty parties, if caught in flagrante delictu. This, at any rate, is the procedure which is most favored culturally, and even if the Moroccan Government attaches a six-month or a year's jail sentence to it, many Rifians follow this path of action in such a case.

41--Ar-raqba, literally "neck" in Arabic, is the term used by the Algerian Kabyles to designate blood-vengeance. The Rifians use another Arabic word, l-'adawa, Rifianized to r'adhawth, meaning "hatred, hostility".

[114] 42--Thwara is synonymous with nubth, and here Blanco is again in error, for, in the Central Rif, taking goats to pasture is neither [233] a communal activity, nor is it done in turn by each small boy or [857] girl in the community, but by the children of each nuclear family on their or its own account.

[114] 43--Blanco's phrase is Es, pues, una sociedad turnante, and this notion, in my opinion, is one of its author's most significant con- [196] tributions to the study of Rifian social organization. With respect to Blanco's definition of nubth, it should be stated that the lexical meaning of the word is "turn", but that in the Rif it refers to a nuclear family, or that of a widow with unmarried children. The [651] most significant function of the nubth in a wider sense, perhaps, is that the annual tirtib tax, calculated on the basis of ownership of animals and crop-yield, worked out on this basis in each village community in a tribe. It should here be noted that the tirtib tax was officially abolished in Morocco in the summer of 1961.

[144] 44--It is maintained by both Rifians and Berbers in the Central Atlas that a man may have an unlimited number of wives at the same time provided that every fifth one is a negress. Not only is this fact [691] considered to be sanctioned by the Shari'a, but I actually knew one Rifian qa'id (now deceased) who had 4 ordinary Rifian wives and a fifth one who was black.

[171] 45--Both widow inheritance (wife marries deceased husband's brother) and the sororate (husband marries deceased wife's sister) are standard practice in the Rif, as well as elsewhere in the Muslim world (see Coon, 1931, op. cit., and E. D. Chapple & C. S. Coon, Principles of Anthropology, New York: Holt, 1942). An outstanding example of widow inheritance is furnished by a woman I know (an informant's mother, to be exact) in the highlands of Aith Waryaghar, who married two brothers in succession (the first was killed in a bloodfeud and the second during the Rifian War of 1921-26) before finally marrying a third brother (the informant's father) and having five children by him!

[881] 46--Puberty rites, in the proper sense of the term, do not exist for either sex in the Muslim Middle East. That a boy or girl is old [171] enough to fast during Ramadan is a tacit sign that puberty has commenced. In the Rif, at this time, boys help their fathers in the fields and girls help their mothers in the house; it is only children of pre-puberty age, of either sex, who pasture goats.

464 Although the akhammas association is the most prevalent,
465 it is only one of several such arrangements. Another sort of laborer is the amkari, who is hired for sowing and odd jobs about the house. His salary is not fixed and he is apparently paid in cash and clothing (Hart 1956:75). Another type of traditional
[233] work association is the amikhan, who is a youth employed to herd a man's goats and sheep. He ". . . is hired for a fixed period . . . [and] gets a non-stipulated sum at the end of his contract" (Hart, ibid.:75). Such an arrangement is graphically portrayed in Bowles' translation of Charhadi's autobiographical novel, A Life Full of Holes. Another form of association is the arabba' who cultivates household gardens, orchards, and trees. He is given a fourth of the fruit and vegetable crops; if the terrain is difficult to terrace, his portion is adjusted (Hart 1956:75).
[256] Most mill owners employ an assistant to do the grinding, and from the mill owner's portion the worker receives a fourth of the grain.

The common element of this sort of association seems to be that the salary the laborer earns is determined by customary regulations rather than by the supply and demand of workers. It
[571] is an association between the elite and the poor which is based
[565] on a fixed compensation and outside of any regulation by the market economy.

675 A correlate of this situation in which commercial arrangements are based on social factors is the irrelevance of written contracts. Whereas contractual agreement forms the basis of most

7: Mikesell K-4,5 (1955-1957) 1961 MX3 Rif MX3
Jebala MX2



of Garet. In the Atlantic coastal zone most of the surface is cultivated, and little vegetation is left to serve as browse. In the eastern plains goats are replaced by sheep, which begin to outnumber them in the lower parts of the Rif. In the Middle Atlas the raising of sheep is associated with transhumance. This mode of pastoral life is still followed to some extent by the Ulad Stut, Aith Bu Yihyi, and Ibdharsen, who spend the winter months near their cereal fields and the summer months in higher country with their sheep. The routes of migration run from the alluvial lowlands into nearby hills, especially the Kar-Kar range. In recent years the development of new irrigation projects has discouraged pastoral life, and the migration is now limited to a few of the young men and boys.

In the western provinces the main draft animals are cows or oxen. In the highlands and in the eastern lowlands the beasts of burden are donkeys and mules, which are used also for threshing and turning olive grinders. Mules are highly prized, for they can carry a heavier load than donkeys and are more agile and hardy than horses. Since there are few horses in the northern zone, most mules are imported from elsewhere in Morocco or from Spain. Moroccan donkeys are a small but hardy race, able to withstand long journeys with heavy loads. Horses have little value except as symbols of wealth and prestige, and are seldom used in the mountains. At the time of the Spanish conquest there were no horses at all in Aith Bu Nsar, Aith Seddath, and Aith Khannus.[12] Camels are restricted to the plains of Garet, where about 2,000 of them are used as milk, pack, and draft animals. Except for an occasional playful experiment, camels are not ridden.

The pack saddle for donkeys and mules is a heavy object made of cloth stuffed with straw. Panniers of twilled basketry, consisting of a double container connected by a strip of basketry, serve nearly all transport needs. Riders perch on top of the load and let their legs dangle to one side. There is little riding in the mountains, for a healthy man can make better time on foot.

Women are the most important burden bearers. Lines of women or girls bent under heavy loads are a common sight everywhere in Morocco. In Jbala they may be seen on any road carrying huge loads of wood and charcoal (pl. 8, *b*).[A] The domestic animals in northern Morocco include ferrets used in hunting, dogs, cats, and chickens. The dogs are of two types, one a small cur and the other a larger sheep dog. Chickens are the exclusive property of women, who sell them and their eggs independently of their husbands. Bees are kept in the mountains, but the average tribesman knows nothing of apiculture, and prefers to assign the task to paid specialists.

## Irrigation and Water Rights

In Moroccan agricultural terminology the most important distinction is that between *bilad bour*, the land of dry farming, and *bilad saqiyah*, the land of irrigation. By far the greatest amount of irrigated land is watered by diversion of surface runoff (pl. 5, *b*).[B] Small dams (*mechra*) are used to divert water into ditches (*saqiyah*), which lead to the irrigable land. The ditches often follow tortuous contours, and may extend for several kilometers. The larger streams are flanked by several channels, sometimes five or six, each bringing water from a

[12] Coon, "Tribes of the Rif," p. 39, cited in note 5.

A, [See p. 132--Analyst]

B, [See p. 129--Analyst]

7: Mikesell K-4,5 (1955-1957) 1961 MX3 Rif MX3



High Atlas. Deforestation can be traced also to the tanners of Fez and Tetuán.[a] The tanners' guild in Fez goes back to the ninth century, when master tanners gathered at this site from Córdoba, Qayrawan, and distant Iran. Fez leather was once exported as far away as Baghdad, and shoes went to Egypt until the present century. During the peak years of production. Fez craftsmen tanned about 500,000 skins a year. The descendants of the original immigrant craftsmen are still busy making handbags, slippers, and other articles for the tourist and export trade.

It is not surprising that *Quercus Ilex*, an important source of tannin, should now be rare in the hills near Fez and Tetuán. There is good reason to believe that the holly oak once covered these hills. One well-informed botanist asserts that the primordial cover of the limestone mountains south of Tetuán probably was a "climax" forest of holly oak.[b] In Gal'aya and the eastern Rif, careless stripping of the bark of *Rhus pentaphylla*, a source of red dye, destroys many trees; "Morocco leather," a trade name in bookbinding, is customarily made from goatskin tanned with sumac.

### Effects of Burning

In the eastern Rif the plant cover is usually too sparse to maintain a fire, and on the Atlantic littoral there is little land left to clear. But between these areas is a large zone covered with forest or scrub that must be burned before the land can be plowed. Some attempt is usually made to control the spread of fire, but conflagrations develop when tinder-dry shrubs are fanned by brisk winds. Fire is employed also for the "improvement" of pasture, for increased blossoming ("bee pasture"), and probably for the mere pleasure of burning or out of carelessness.[c]

The importance of pastoral fires has been emphasized by most students of the Mediterranean landscape,[d] but in northern Morocco fires set to clear away noxious shrubbery or to facilitate movement of stock are less important than agricultural fires. Pastoral fires are neither necessary nor desirable where there are goats, for these animals thrive on woody browse and can break through the thickest scrub. Sheep outnumber goats only in the drier eastern sector, where impenetrable formations are rare. For every fire set to "improve" pasture, probably more than ten are set to prepare new fields for plowing.

Whatever its cause, fire is a major agent of deforestation. The difficulty is that there are many kinds of fires: quick fires that run over a thin mantle of vegetation, great conflagrations that consume thicker formations, fires that remain close to the ground, fires that extend to the crowns of trees. It makes a great deal of difference whether fires recur after five or after twenty-five years. Moreover, the important factor may be not the fire itself but what happens to an area after it has been burned.

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[a] R. le Tourneau, L. Paye, and R. Guyot, "La corporation des tanneurs et l'industrie de la tannerie à Fès," *Hespéris*, 21 (1935), 167–240; A. Joly, "L'industrie à Tétouan," *Archives Marocaines*, 8, 15, 18 (1906–1912).

[b] J. Ruiz de la Torre, *El matorral en Yebala (Marruecos español)* (Madrid: Instituto de Estudios Africanos, 1955), pp. 26–27, and the map showing the "natural area" of *Quercus Ilex*.

[c] H. Marc, *Notes sur les forêts de l'Algérie* (Paris: Larose, 1930), p. 396, lists the causes of serious forest fires from 1886 to 1915 as "accidents" (8 per cent), "imprudence" (32 per cent), "intentional" (23 per cent), "unknown" (37 per cent).

[d] G. Kuhnholtz-Lordat, "Influence des feux pastoraux dans la région méditerranéenne," *Jour. d'Agriculture Tropicale et de Botanique Appliquée*, 3 (1956), 785–791.

7: Mikesell K-4,5 (1955-1957) 1961 MX3 Rif MX3



372 139 311 The main difference between the effects of fire in broad-leaf forests and in coniferous forests is that the latter, with the exception of the Barbary thuya, do not reproduce by coppice shoots. The resinous bark of maritime and Aleppo pines is highly inflammable, and since neither tree reproduces from shoots, burning is usually fatal. Yet both species, especially the Aleppo pine, are pyrophytes. Indeed, the presence of a large number of pine seedlings is a sure indication of recent burning. Both species produce abundant seed, and proliferation is encouraged by the destruction of competitive growth. If fifteen or more years have elapsed since a fire, the seedlings reach maturity and the ground is again littered with seeds; but recovery is thwarted by more frequent fires.

Little is known of the effects of fire on the Moroccan fir, but it is probably unimportant as an agent of deforestation. The three main stands of fir grow on the highest slopes of limestone mountains, where there is little underbrush. Furthermore, these mountains do not have sufficient surface water to support permanent human settlement. Goats driven to the mountains from the lower slopes have destroyed many seedlings, but there is little evidence of destructive forest fires. Nor is there evidence of destructive fires in relatively undisturbed stands of cedar. Such forests have little underbrush to serve as kindling, and the cedar itself does not burn easily. But fires may be serious where cedar forests have been invaded by secondary growth. Most of the shrubs common in open stands of cedar—*Cistus, Daphne, Genista, Cystius, Thymus,* and *Halimium*—are highly inflammable. Occasional fires followed by long periods free of disturbance generally do not cause deforestation, but deforestation results when seedlings are destroyed before they can produce seed. The critical interval is disadvantageously long, for the Atlas cedar does not produce abundant seed until it is forty to fifty years old.

### Destruction by Domestic Animals

233 311 It would be hard to overemphasize the destruction wrought by grazing and browsing. More than half a million sheep and over a million goats are maintained in this zone. These figures are impressive, but the striking fact is that so large a number of animals are maintained by sedentary farmers. No tribe in northern Morocco is nomadic, and only the Ulad Stut and Aith Bu Yihyi practice transhumance. The main types of pastoral disturbance are well described by Braun-Blanquet.[30] Heavy pasturing causes: (1) withdrawal of large quantities of plant matter, (2) mechanical damage to plants by grazing, browsing, and trampling, (3) selective destruction of desired plants, (4) introduction of nitrophilous communities, and (5) alteration of microrelief.

The few cattle and camels kept in northern Morocco probably are not important agents of deforestation. Both animals are used almost exclusively for draft purposes, and few villages can afford to maintain more than one team. Authorities disagree on whether sheep have been significant factors in the process of deforestation. Most of the sheep in northern Morocco are in the drier and warmer parts of the zone, i.e., Garet and the eastern Rif. Woody plants are too

[113] Clarendon Press, 1929); and B. O. Coventry, "Denudation of the Punjab Hills," *Indian Forest Records*, 14 (1929), 49–78.

[30] Braun-Blanquet, *op cit.*, pp. 367–368, cited in note 31.

7: Mikesell K-4,5 (1955-1957) 1961 MX3 Rif MX3



233 tough and massive to be adversely affected by grazing, but sheep can destroy
311 shoots and seedlings, particularly those of the resinous trees.[71] The presence of monotonous formations of *Stipa tenacissima* in the lower Moulouya Valley and on the Algerian Hauts-Plateaux probably indicates overgrazing, for a history of excessive grazing may be inferred wherever hard tussock grasses have replaced more palatable growth.

Where goats are numerous, deforestation is accelerated, for no hillside is too steep to daunt this very agile creature, and few plants escape its voracious appetite (pl. 8, *a*). In Arcila, goats scale the nearly vertical Portuguese walls, and in the Sous Valley they climb into *Argania* trees. Not content with the grazing of grass, goats tear it up by the roots. When woody browse is exhausted, the soil itself is grazed in an attempt to get at the seeds of grasses and other plants. It is not surprising that the goat should be described as an "ecologic dominant,"[72] and that many naturalists would like to see it become extinct, except in zoos.[73]

[392] The most serious deforestation occurs when heavy browsing follows burning. Premature browsing or grazing results in the destruction of seedlings before they can produce a new crop of seeds. The French forestry service has ruled that burned areas should be closed to pasture for at least six years. The recovery of cedar forests may be thwarted if excessive browsing takes place within twenty years.[74]

311 The best-known relict of the cedars of Lebanon, a stand of several hundred
137 trees, is protected from vandalism by a church and from goats by a stone wall.[75] In open places in the Mamora forest, young cork oaks survive only within a protective cluster of palmetto. On the semiarid plains of northeastern Morocco, *Pistacia atlantica* rarely survives unless it is protected by a spiny hedge of zizyphus or sumac (*Rhus pentaphylla*), and in the Sous Valley the latter species plays an even more vital role as a protector of young *Argania* trees. In the mountains of northern Morocco, seedlings of cedar, pine, and fir are protected by the armature of the juniper. Elsewhere on the Mediterranean versant, young trees may be protected by *Genista, Calycotome, Ulex,* and other thorny Leguminosae.

311 Trees that reproduce by coppice shoots are seldom completely destroyed, but
233 excessive browsing may reduce them to shrub form. In the geographic textbooks
392 the scrub or dwarf state of the Mediterranean woodland is often described as a
137 consequence of the Mediterranean precipitation regime. The error of this generalization is manifest in the holly oak. That the stunted and deformed appearance of this tree results from fire-induced sprouting and browsing is evident when stately trees growing on protected sites are compared with the prevalent forms. Neither climate nor any other element of the inanimate environment can explain

[TEXT CONTINUED ON PAGE 107]

[71] Boudy, *op. cit.*, I, 616, is more emphatic: "Il est d'observation courante au Maroc, comme en Algérie, que dans tous les massifs de résineux où le parcours des moutons est intense, il n'y a pas de régénération et que ces massifs sont condamnés à disparaître à plus ou moins longue échéance."

[113] [72] Marston Bates, "Man as an Agent in the Spread of Organisms," in Thomas, *op. cit.*, p. 798, cited in note 7.

[73] Raymond Furon, "The Gentle Little Goat: Arch Despoiler of the Earth," *The Unesco Courier*, January, 1958, pp. 30–32.

[113] [74] Cf. Boudy's comment, *op. cit.*, II, 532: "Régénération de la cédraie et pâturage sont choses incompatibles." The prerequisites of recovery probably include at least three or four years of unusually heavy precipitation.

[75] W. C. Lowdermilk, "Lessons from the Old World to the Americas in Land Use," *Smithsonian Inst. Ann. Rept. 1943* (Washington, D.C., 1944), p. 416.

A, [See p. 132--Analyst]

7: Mikesell K-4,5 (1955-1957) 1961 MX3 Rif MX3
Jebala MX2
Senhaja MX4



the stunted form of this tree. The same remarks apply to dwarf forms of thuya and oleaster. On protected sites even the palmetto may become a tree and, when disturbance is manifest, dwarf forms of cedar develop.

## Vegetation on Sacred Sites

Throughout Morocco and to some extent elsewhere in the Muslim world, cemeteries are regarded as sacred ground. Sanctity is ascribed also to the areas adjacent to tombs or shrines of saints (*murabitin*). The cult of saints has been an important factor in Moroccan history, and tombs or shrines are found in the territory of each tribe.[a]

Sacred sites often constitute islands of verdure. This correlation is not unique. In *The Golden Bough* Sir James Frazer describes sacred woods in many parts of the world.[b] The interesting feature of the Moroccan situation is that such groves are extraordinarily numerous and that the veneration relates to the ground in which plants grow and not to the plants themselves.[c] Protected growth is usually more dense than the growth on adjacent profane land, and the height and girth of individual plants exceed those of plants growing on unprotected land. Some species (e.g., *Pistacia lentiscus* and *Chamaerops humilis*) rarely achieve arborescent forms on unprotected sites.

The nature of the protected growth varies from a single shrub or tree to thickets and groves. Figure 25 shows the silhouettes of vegetation on a few sacred sites. These examples, selected from hundreds, illustrate the general pattern (cf. pl. 9, *a* and *b*).

Figure 25, *a*, shows a few mature cedars surrounded by a dense growth of holly oak. The prevalent vegetation in this area is a shrub formation dominated by *Cistus laurifolius*. There are no other cedars within a radius of several hundred meters, and holly oaks, apart from those on sacred sites, are in scrub form. It is evident that succession has resulted in a retrogression from cedar to oak forest and then to a sparse cover of shrubs.

Figure 25, *b*, illustrates a protected formation dominated by oleasters (cf. pl. 9, *a*). *Pistacia lentiscus* becomes prominent where oleasters are widely spaced and light reaches the ground freely. Palmetto and thuya, even more heliophilous, are confined to the edges of the protected growth. In the surrounding area the vegetation is limited to shrubs. Numerous other examples of oleaster groves fringed with pistacia and palmetto could be described. A handsome grove appears at the tomb of Sidi Manari on Cape Malabata opposite Tangier. Five groves appear on one ridge between Tangier and Tetuán. Others appear on the marine terraces between Tangier and Arcila, and on the lower slopes of the limestone mountains

[TEXT CONTINUED ON PAGE 110]

[a] E. Lévi-Provençal, "Marabout," in H. A. R. Gibb and J. H. Kramers, eds., *Shorter Encyclopaedia of Islam* (Leiden: E. J. Brill, 1953), pp. 325–326; Emile Dermenghem, *Le Culte des saints dans l'Islam maghrébin* (Paris: Gallimard, 1954); Edward Westermarck, *Ritual and Belief in Morocco* (London: Macmillan and Co., Ltd., 1926).

[b] Sir James Frazer, *The Magic Art and the Evolution of Kings* (New York: The Macmillan Co., 1935). Part I of *The Golden Bough*.

[c] J. Cola Alberich, *Cultos primitivos de Marruecos* (Madrid: Instituto de Estudios Africanos, 1954), refers to tree worship (*dendrolatria*), but the evidence he cites relates to popular ideas of the medicinal and magical qualities of plant material (leaves, seeds, acorns, etc.) and not to the sanctity of plants as such. It is possible, for example, to recognize magical qualities in pine cones and yet have no reluctance to destroy or mutilate pine trees. In Morocco the important consideration is not what qualities a plant may possess but *where* it grows.

A, [See p. 133--Analyst]